

# INVESTIGATOR'S ANNUAL REPORT

## National Park Service

All or some of the information provided may be available to the public

<b>Reporting Year:</b> 2005	<b>Park:</b> Redwood National and State Parks
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<b>Permit#:</b> REDW-2005-SCI-0026	
<b>Park-assigned Study Id. #:</b> REDW-00022	
<b>Project Title:</b> Distribution and relative abundance of bat species in Crater Lake National Park, Redwood National and State Parks, and Oregon Caves National Monument	
<b>Permit Start Date:</b> May 28, 2005	<b>Permit Expiration Date</b> Dec 31, 2005
<b>Study Start Date:</b> May 28, 2005	<b>Study End Date</b> Dec 31, 2005
<b>Study Status:</b> Completed	
<b>Activity Type:</b> Inventory	
<b>Subject/Discipline:</b> Mammals	
<b>Objectives:</b> The objectives of this study were to: 1) determine the diversity, relative abundance, and activity of bats in REDW, 2) determine the distribution of bats in REDW, and 3) compare acoustical and live capture techniques for inventorying bats	
<b>Findings and Status:</b> <p>At REDW, 77 bats representing 9 species were captured in mist nets during 25 nights (12,270 m2 net hours of netting effort). Two species represented 77.3% of my mist net captures, Yuma myotis (49.4%) and silver-haired bats (27.9%). The remaining 22.7% of the captures consisted of 7 species, California myotis (7.5%), big brown bats (5.1%), little brown bats (3.8%), hoary bats (2.4%), long-legged myotis (1.3%), Townsendâ s big-eared bats (1.3%), and pallid bats (Antrozous pallidus) (1.3%). At REDW, 58.4% of the captures were males. I was unsuccessful at capturing bats at 2 sites, Tall Tree Grove on Redwood Creek, and the Pool Near Minors Ridge Trailhead. In addition to my captures, I visually observed 5 Townsendâ s big eared bats in the northernmost building at the World War II Radar Station on 22 September 2004.</p> <p>Four sites provided 45 (60.0%) of all captures during 13.3% of all netting effort in REDW. The Yurok Trail site provided the highest relative abundance estimate. Prairie Creek, Elk Prairie (near bridge), and Lost Man Creek provided the second, third, and fourth highest relative abundance estimates. Yuma myotis appeared to be the most widespread species in REDW being captured at 10 locations (66.6%) each. Silver-haired bats were captured at 4 (26.7%) sites. Both big brown bats and little brown myotis were captured at 3 sites (20%).</p> <p>In addition to live capture techniques, I recorded Anabat sequence files at 20 sites during 57 nights. At REDW, 96.8% of the activity during the first 2.5 hours of the night was represented by the 2 myotis species groups. Fifty kHz myotis provided the highest bat activity (a mean of 42.5 passes per hour for the first 2.5 hours of the night). Forty kHz myotis, provided the second highest activity (25.7). The remaining 4.2% of activity was represented by silver-haired bats (1.3), hoary bats (0.5), big brown bats (0.3), long-eared myotis (0.2), Mexican free-tailed bats (0.02), and fringed myotis (0.02).</p> <p>Five sites provided 52.2% of the activity during the first 2.5 hours of the night at REDW, Redwood Creek (a mean of 88.0 passes per hour for the first 2.5 hours of the night), Lagoon Creek (67.0), Coastal Scrub Beach Pond (61.2), Espa Lagoon (47.0), and Mill Creek Site # 2 (45.0). Median activity at</p>	

the all night monitoring sites was 90.0 passes per night (Table 15). Three of 7 sites provided 80.8% of the activity at the static monitoring locations in REDW, Lagoon Creek (a mean of 779.3 passes per night), Mill Creek on Howland Hill Road (354.5), and the Old Southern Operation Center (301.0) (Table 16). Based upon the Anabat data collected during the first 2.5 hours of the night, 40 and 50 kHz myotis were most widespread, being documented at 19 (95.0%) sites (Table 14). Big brown bats were documented at 6 (30.0%) sites.

Six species or species groups were captured, recorded, and analyzed during 17 sampling events at REDW. I recognized that both techniques likely missed species that were capable of avoiding the respective device or that flew outside the area sampled by these devices. However, for comparison, it was assumed that, at a given park, the total number of species detected by either method represented a thorough and comprehensive inventory. Based upon that assumption, captures accounted for 35.8% and acoustic sampling 64.2% of the total recorded occurrences. For 25.4% of the total recorded occurrences, species were documented by both methods. A greater number of species were detected by acoustic means than by capture for all sites combined. The number of species detected was greater for acoustic sampling than for captures ( $U = 55.5$ ,  $P = 0.002$ ).

**For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?**

No

**Funding provided this reporting year by NPS:**

18000

**Funding provided this reporting year by other sources:**

0

**Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college**

**Full name of college or university:**

n/a

**Annual funding provided by NPS to university or college this reporting year:**

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